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To cite this article: Suzanne Lischer, Jürg Schwarz, Hannes Wallimann, Maida Mustafić & Emilien Jeannot (27 Feb 2024): The effect of exclusion on subjective well-being indicators and problem gambling in Swiss casinos, International Gambling Studies, DOI: [10.1080/14459795.2024.2321170](https://doi.org/10.1080/14459795.2024.2321170)

To link to this article: <https://doi.org/10.1080/14459795.2024.2321170>



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Published online: 27 Feb 2024.



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The effect of exclusion on subjective well-being indicators and problem gambling in Swiss casinos

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ABSTRACT

The aim of this research project was to evaluate the influence of exclusion as a harm-reduction intervention on parameters such as gambling behavior, motivation to seek help and several well-being measures. Gamblers, who were excluded from both land-based and online Swiss casinos, completed a written questionnaire three times, at six-month intervals. To identify possible changes due to the exclusion, gamblers who were not excluded were also surveyed. Of the 242 respondents, 55.0% ($n = 133$) were not banned at any time, 13.6% ($n = 33$) were excluded at the time of the first survey wave and remained so, while 31.4% ($n = 76$) of respondents were excluded for a minimum of one wave. The present study highlights the influence of exclusion on gamblers' well-being. A repeated-measures ANOVA revealed considerable improvements for the excluded gamblers with respect to the parameters of mental health, general well-being, satisfaction with finances, and severity of disordered gambling behavior. The results demonstrate that exclusion has an impact not only on reducing gambling-related harm and mental health problems but may also positively influence well-being. Alongside parameters such as the individual's financial circumstances and severity of gambling disorder, well-being parameters should be considered within the exclusion processes and further harm reduction measures.

ARTICLE HISTORY

Received 11 May 2023
Accepted 6 February 2024

KEYWORDS

Problem gambling;
gambling-related harm;
harm reduction; well-being;
exclusion; public health

Introduction

Gambling is typically defined as 'an activity that involves placing something of value at risk in the hopes of gaining something of greater value' (Potenza et al., 2001, p. 141). It is a common activity across cultures, which for some individuals can evolve into a gambling disorder (GD), characterized by 'a persistent, recurrent pattern of gambling that is associated with substantial distress or impairment' (Potenza et al., 2019, p. 1) and is included in the fifth edition of the Diagnostic and Statistical Manual (DSM-5; American

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Psychiatric Association, 2013). While GD is classified as a mental health disorder, the term ‘problem gambling’ appears to have a broader usage. On the one hand, the term refers to a less severe form of the disorder; on the other, it refers to a public health conceptualization that defines the disorder largely in terms of its harmful consequences (Delfabbro, 2013). Internationally, past-year prevalence rates for problem gambling have been reported to range from 0.12% to 5.8% (Calado & Griffiths, 2016). However, gambling-related harms can negatively impact an individual’s health and well-being in many ways (Blackman et al., 2019). These prevalence rates therefore do not fully capture the extent of gambling-related harms experienced by people who gamble and others who are negatively affected by gambling (Hilbrecht et al., 2020). Thus, gambling-related harm can be defined as any ‘initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or well-being of an individual, family unit, community or population’ (Langham et al., 2016, p. 4). Impacts are broad and span multiple domains, including finances, relationships, health, emotions, psychology, work, study, culture, and crime (Tulloch et al., 2021). They do not necessarily affect only individuals in the highest risk category of GD, but also those in the moderate-risk and low-risk groups (Blackman et al., 2019), thus, gambling-related harms can occur across the spectrum of gambling behavior and severity (Langham et al., 2016). People can therefore be harmed by ‘spending too much time or money gambling, regardless of whether their pattern of behavior meets clinical criteria for pathology’ (Rockloff et al., 2022, p. 392). Although these effects may be less severe at the individual level, they are not negligible (Rockloff et al., 2022). Nonetheless, health and well-being impacts occur mainly at the more severe end of the risk spectrum (Tulloch et al., 2023).

Influence of exclusion on well-being

Interventions are widely accepted as a key way to reduce or eliminate gambling-related harm (McMahon et al., 2019). One such intervention is exclusion from a gambling venue. A range of studies carried out in different countries have reported improvements in multiple factors due to exclusion (either imposed or self-exclusion) (Kotter et al., 2017; Lischer, Schwarz, Wallimann, & Mathys, 2023) including well-being (Parke et al., 2014). One of the first studies that systematically examined the question of the effect of exclusion upon well-being was presented by Ladouceur and colleagues. A significant reduction in the negative consequences of gambling was observed, namely for daily activities, social life, work, and mood (Ladouceur et al., 2007). Following this initial study, Hayer and Meyer formulated four questions concerning casino gambling stress indicators. The authors reported a significant improvement regarding the variable ‘casino gambling stressor – reduction in quality of life’ (Hayer & Meyer, 2011). An evaluation of the Missouri Voluntary Exclusion Program (MVEP) examined, among other issues, the effect upon gamblers’ quality of life ratings. Average quality of life scale calculations showed a slight improvement in quality of life after participating in the exclusion program. However, 24 participants (21.2%) disclosed a deterioration in the quality of certain aspects of their lives. The most frequently reported deteriorations were related to physical health (13.3%), emotional health (7.1%), and participation in leisure activities (5.3%) (Nelson et al., 2010). Kotter and et al. assessed the well-being of excluded gamblers via the Well-Being Scale (WHO-5 Index II). A mean score of 15.2 was reported (Kotter

et al., 2019). According to version II of the WHO-5 index, a score below 13 is taken to indicate low or poor well-being (Brähler et al., 2007). Overall, 69.1% of excluded gamblers indicated a moderate to high level of general well-being, 56.9% reported being satisfied with life and 77.6% reported no or slight psychological distress (Kotter et al., 2019). In their study of the effectiveness of a Multi-Venue Self-Exclusion-Program, Pickering and colleagues used the WHO Quality of Life – Brief version. The overall quality of life was found to be ‘good’ for those participants who had self-excluded for a period of over 12 months. This was a significantly higher rating than that of participants excluded from gambling for shorter periods (Pickering, Blaszczynski, et al., 2018). The effect of exclusion on improving mental health in addition to well-being is also supported by the findings in several reviews (Drawson et al., 2017; Gainsbury, 2014; Kotter et al., 2018). However, as noted by Hing and colleagues, it remains unclear, whether the reported results are due to the intervention itself (Hing et al., 2015). It is likely that the effects of exclusion are influenced by several other factors. Thus, they argue that evaluation of exclusion outcomes should compare excluded and non-excluded gamblers who have experienced harm and are willing to take action to resolve it (Hing et al., 2015).

Problem gambling and well-being

Problem gambling research has hitherto focused on gambling-related harms and their associated psychological health impact, which consists of concrete indicators such as safety, education, employment, and an absence of diagnosed mental and physical illness (Tulloch et al., 2021). The impact of gambling-related harms on subjective well-being has gained prominence, since a significant negative relationship between subjective well-being and gambling problems has been found (Farrell, 2018). In this regard, Pickering and colleagues concluded in their review that ‘the use of outcomes extended beyond gambling symptoms and behavior to include measures of positive health as manifested by physical, mental and social wellbeing’ (Pickering, Keen, et al., 2018, p. 423). The field of subjective well-being comprises the scientific analysis of how people evaluate their lives – both now and for longer periods such as during the past year. These evaluations include people’s emotional reactions to events, their moods, and the judgments they form about their overall life satisfaction, fulfillment, and satisfaction within specific domains such as marriage and work (Diener et al., 2003). Overall, it is notable that the concepts of well-being and quality of life are sometimes used synonymously in the literature (Schumacher et al., 2003). The Encyclopedia of quality of life and well-being research, for example, describes subjective well-being as ‘individual evaluation of quality of life (QOL) and therefore converges with the definition of QOL’ (Proctor, 2014, p. 6437).

The present study

The present study is part of a research project that examined the effectiveness of exclusion as a player protection measure (Lischer et al., 2018). This project involves a three-wave longitudinal study in which excluded (experimental group) and non-excluded gamblers (comparison-group) were asked about their gambling behavior, their motivation to seek help and their perceived well-being. Through the identification of statistically significant differences between the excluded and the non-excluded

gamblers, conclusions were drawn about the influence of the exclusion on the indicators examined. The survey took place between September 2019 and July 2022 and was carried out in German, French and Italian speaking parts of Switzerland. The first associated project, which examined various parameters related to gambling behavior, concluded that exclusion led to statistically significant reductions in gambling frequency, duration, GD, and expenditures for gambling with effects being stronger for gamblers who were excluded throughout the survey period (Lischer, Schwarz, Wallimann, & Mathys, 2023). The second project, which only considers the first two waves of the survey, examined several factors that motivate or hinder casino gamblers from seeking help. In the context of exclusion, it was observed that six months after the baseline survey, the proportion of excluded gamblers among those seeking help was statistically significantly higher (Lischer, Schwarz, Wallimann, Jeannot, et al., 2023). The project at hand investigates the influence of exclusion on the subjective well-being of gamblers, who are excluded from Swiss land-based and online casinos, over the three survey time points. In addition to changes in mental health and the severity of GD, modifications in life-satisfaction in several life domains and general well-being are included in the analysis. This approach accepts the premise that the effects of gambling-related harms are broad, and span diverse domains (Browne et al., 2016; Langham et al., 2016; Tulloch et al., 2021). Hence, there are three sub-projects, which can be clearly distinguished from each other in terms of content. However, there is some overlap in terms of methodology and certain indicators (problem gambling severity, gambling behavior or debts due to gambling), as these indicators enable comprehensive investigation of the research question (i.e. the influence of exclusion on well-being). The strengths of this study are that it measures the effects of exclusion on gamblers' well-being over time, considering a comparison group. Based on the results, possible implications for exclusion practice and prevention can be discussed from a public health perspective.

Method

Setting

The Federal Gambling Act was recently implemented to regulate gambling in Switzerland (Swiss Federal Assembly, 2018). Within the country, there are a total of 21 casinos, offering table games, slot machines and poker. As of 2019, land-based casinos can apply for a license extension for online casino games. According to the Federal Gambling Act, each casino as well as the two lottery companies are obliged to develop a clear preventive strategy (Lischer, Schwarz, Wallimann, Jeannot, et al., 2023; Swiss Federal Assembly, 2018). Exclusions are imposed if proof can be found or there is strong suspicion that, due to their gambling behavior, specific gamblers are maintaining excessive debts, placing bets that are disproportionate to their financial circumstances, or experiencing other disruptions (Lischer & Schwarz, 2018; Swiss Federal Assembly, 2018). On the other hand, gamblers can also ask to be self-excluded. An exclusion is of an unlimited duration. However, after three months, a request may be made for a voluntary exclusion to be lifted. Imposed exclusions can be lifted once the reason for them no longer exists. Prior to lifting any exclusion, a gambler must prove, through an affordability check, that he or she is not in debts and has sufficient financial means to partake in gambling. Moreover, it is

mandatory that he or she must complete an assessment with a qualified treatment provider. Exclusion simultaneously prevents the individual from gambling at land-based and licensed online casinos, sports betting and online lotteries across Switzerland (Lischer, Schwarz, Wallimann, & Mathys, 2023; Lischer, Schwarz, Wallimann, Jeannot, et al., 2023; Swiss Federal Assembly, 2018). In 2017, the 12-month-prevalence rate for at-risk gambling in Switzerland was 2.8%, while the 12-month-prevalence rate of pathological gambling was 0.2%. Data were obtained from the Swiss Health Survey 2017, which is conducted every five years (Dey & Haug, 2019). The survey instrument used was the National Opinion Research Centre Diagnostic and Statistical Manual of Mental Disorders – Loss of Control, Lying and Preoccupation (NODS-CLiP) (Toce-Gerstein et al., 2009).

Field access

As originally described in Lischer, Schwarz, Wallimann, Jeannot, et al. (2023), all directors from the total of 21 Swiss casinos were asked in a personalized letter whether the survey could be conducted in their casinos. Of these, 19 directors gave their consent. The contact persons were those responsible for player protection programs, as they are in charge of the exclusion procedure and are familiar with issues associated with gambling-related harms. They were informed about the study within a personal briefing. A manual describing the procedure for recruiting study participants was also prepared. As a further step, the person responsible for player protection instructed the casino employees regarding the study procedure.

Recruitment of study participants

The excluded gamblers, both from online and land-based gambling settings were recruited with the help of flyers, which were handed out in the venue or by e-mail as part of the exclusion process. The flyers contained a link as well as a QR code to the website (gluecksspielstudie.ch/etudesurlejeu.ch/studiosulgioco.ch) set up especially for this purpose. The website provided participants with study information, including details about the guarantee of confidentiality and the right to withdraw from the study at any time. People who wanted to participate could then give their consent by registering their e-mail address. A questionnaire, which had been created using the Unipark solution, was then emailed to participants within the next three working days. Excluded gamblers therefore completed the first survey at the beginning of their exclusion period. Six months and then twelve months later, they received e-mails for the second and third surveys, respectively. Participation in the first and second survey was rewarded with a shopping voucher of 20 Swiss Francs, and 50 Swiss Francs for the third survey. Cases that could be assumed to involve cheating (for example, completed questionnaires that took an unrealistically short response time) were not included in the data. A separate flyer was created for the recruitment of non-excluded individuals. This was displayed in the venues or sent out in casino newsletters. Thus, the sample of non-excluded gamblers was recruited randomly by casino employees and had the ongoing opportunity to sign up for the study. By implementing filters in the questionnaire, the non-excluded individuals

were not presented with questions about the exclusion. The remainder of the process was the same as that followed by the excluded gamblers.

Measures

Sociodemographic data

Demographic questions were related to age, gender and nationality.

Life-domain satisfaction

The life-domain categories were taken from the Swiss Household Panel (Voorpostel et al., 2020). For the purposes of the survey, six relevant life domains were selected (health satisfaction, satisfaction with finances, satisfaction with occupation, satisfaction with living arrangements, satisfaction with personal relationships, leisure-time satisfaction). Respondents indicated their satisfaction with the abovementioned life domains. The rating scale ranged from 0 (*not satisfied at all*) to 10 (*completely satisfied*).

Life satisfaction

Respondents' global life satisfaction was assessed with the Life Satisfaction-1 short scale (L-1; Beierlein et al., 2014). L-1 is a modified one-item scale version of the life-satisfaction scale used in the Socio-Economic Panel (SOEP; Schimmack et al., 2008). The response format of the L-1 consists of a unipolar, 11-point scale ranging from 0 (*not satisfied at all*) to 10 (*completely satisfied*) (Beierlein et al., 2014). The German L-1 version was translated and back translated in French and in Italian. Subsequently, the questions were checked by native-speaking psychologists.

General well-being

General well-being was assessed by the 5-item WHO-Five Well-being Index (Bech et al., 2003). The WHO-5 items are as follows: (1) '*I have felt cheerful and in good spirits*', (2) '*I have felt calm and relaxed*', (3) '*I have felt active and vigorous*', (4) '*I woke up feeling fresh and rested*' and (5) '*My daily life has been filled with things that interest me*'. The respondent was asked to rate how well each of the 5 statements applied within the last 14 days. Each of the 5 items was scored from 5 (*all of the time*) to 0 (*none of the time*). The overall total score therefore theoretically ranged from 0 (absence of well-being) to 25 (maximal well-being) (Topp et al., 2015). As mentioned above, a score below 13 was taken to indicate low or poor well-being (Brähler et al., 2007).

Mental health

Respondents' mental health was assessed using the Patient Health Questionnaire (PHQ-4). This measure has two subscales, each containing two items for depression and anxiety, with scores ranging from 0 to 6 for each subscale (Kroenke et al., 2009). The PHQ-4 consists of the first two items of the Generalized Anxiety Disorder scale (GAD-7; Spitzer et al., 2006) and the first two items of the Patient Health Questionnaire (PHQ-9;

Kroenke et al., 2001). Respondents rated their symptoms using a four-item Likert rating scale ranging from 0 (*not at all*) to 3 (*nearly every day*), and a total score ranging from 0 to 12. The severity of clinically relevant depression and/or anxiety, according to the PHQ-4 score is as follows: none to minimal (0–2), mild (3–5), moderate (6–8), severe (9–12). For the German, Italian and the French versions of PHQ-4, the instruments PHQ-9 and GAD-7 were taken from Pfizer (Pfizer, n.d.).

Problem gambling

Gambling disorder was considered as an intervening variable, measured by the South Oaks Gambling Screen (SOGS); a 20-item instrument used to screen for pathological gambling (Lesieur & Blume, 1987). The SOGS-R was scored by summing the number of items endorsed out of 20. A cutoff score of 5 or more indicated that the respondent was experiencing severe gambling-related problems, whereas a score between 1 and 4 indicated some problems. Participants' responses referred to their gambling behavior during the past six months (Lesieur & Blume, 1993). Authorized German, French and Italian versions were used for the present study (Cremer et al., 2001; Lejoyeux, 1999; Lesieur et al., 1991).

Gambling behavior

To measure gambling behavior, the questionnaire contained questions on respondents' use of the different types of gambling products available in Switzerland and abroad, during the past six months. A total of 25 game-categories were surveyed, which were condensed to a total of six categories for statistical analysis (land-based Swiss casino, licensed Swiss online games, online Swiss Lotto/sports betting, land-based Swiss/sport betting, unlicensed online games, and other).

Debts due to gambling

The issue of debt was also addressed. The question '*Do you have debts due to gambling?*' could be answered with yes or no. If the answer was yes, participants were then asked to report the amount of debt, due to gambling.

Sample

As originally reported in Lischer, Schwarz, Wallimann, Jeannot, et al. (2023), the sample size required for the study was estimated using a power analysis. An ANCOVA with repeated measures over the survey time points T1 to T3, with a factor for the groups, as well as further factors and a covariate were assumed as the basis for the statistical test used in the data analysis. A significance level of 5% and a power ($1-b$) of 80% as well as a medium effect size were assumed, i.e. $f=0.25$ (Cohen, 1992). The calculation with G*Power (Faul et al., 2007) showed that 80 subjects were needed for each group (excluded and non-excluded gamblers), at time T3.

Statistical analyses

Statistical analyses included descriptive statistics (frequencies, mean values) and statistical tests (Chi-square test, Fisher's exact test). To model complex relationships, a repeated measures ANOVA was calculated. When prerequisites were not met, for example, when the normal distribution assumption was violated or when subsamples were small, nonparametric equivalents were used. The statistical significance level was set at $\alpha = 0.05$. Analyses were performed using the statistical software R.

Compliance with ethical standards

As originally reported in Lischer, Schwarz, Wallimann, Jeannot, et al. (2023), the Swiss Ethical Authority decided that the project did not require formal ethical approval since it does not involve research on human diseases or the structure and function of the human organism (file number Req-2019-00060). The participants provided their written informed consent to participate in this study. The data management plan was approved by the Swiss National Science Foundation.

Table 1. Baseline measures of excluded and non-excluded gamblers' characteristics ($n = 346$).

	Excluded ($n = 87$)	Non-excluded ($n = 259$)	p -values	% missing
Gender			0.040*	0.3
Male	80.2% (69)	67.8% (175)		
Age			0.918	1.1
18–25	24.1% (21)	27.1% (69)		
26–45	59.8% (52)	58.4% (149)		
46–65	14.9% (13)	12.9% (33)		
66 and above	1.1% (1)	1.6% (4)		
Citizenship			0.682	11.3
Switzerland	67.5% (52)	70.9% (163)		
Other	32.5% (25)	29.1% (67)		
Debts due to gambling			<0.001*	6.9
Yes	21.5% (17)	3.7% (9)		
SOGS-R			<0.001*	0.0
No problem (0)	8.0% (7)	45.9% (119)		
Some gambling problems (1–4)	43.7% (38)	43.2% (112)		
Severe gambling problems (≥ 5)	48.3% (42)	10.8% (28)		
PHQ-4			0.144	4.4
Minimal (0–2)	22.4% (19)	30.5% (75)		
Mild (3–5)	25.9% (22)	24.8% (61)		
Moderate (6–8)	27.1% (23)	30.1% (74)		
Severe (9–12)	24.7% (21)	14.6% (36)		
Past-six-month gambling prevalence				
Land based casino	80.5% (70)	85.7% (222)	0.318	0.0
Licensed online games	57.5% (50)	23.9% (62)	<0.001*	0.0
Online Swiss Lotto/sports betting	23.0% (20)	18.9% (49)	0.505	0.0
Land-based Lotto/sports betting	37.9% (33)	36.7% (95)	0.936	0.0
International online games	48.3% (42)	35.9% (93)	0.055	0.0
Others	46.0% (40)	42.5% (110)	0.656	0.0

All tests in this table were Chi-square tests unless the conditions were not met. In these cases, Fisher's exact test was performed. * $p < 0.05$.

Results

Characteristics of excluded and non-excluded gamblers at baseline

The characteristics of the respondents at the first survey time point are illustrated in Table 1.

There was a statistically significantly higher proportion of men among the excluded gamblers ($p = 0.04$), when compared to the non-excluded sample. In contrast there was no difference between the excluded and non-excluded gamblers in terms of age and nationality. There was also a statistically significant difference in terms of debt situation due to gambling ($p < 0.001$), with the range of debt being between 10 and 150,000 Swiss Francs, which is plausible, given that exclusion is legally mandatory if a gambler is found to have debts. Table 1 demonstrates the statistically significant association found between exclusion status and SOGS-R scores ($p < 0.001$). The proportion of excluded gamblers self-reporting a SOGS-R score of 0 (indicating no problem) was substantially lower (8.0%) than that of non-excluded gamblers (45.9%). Conversely, the proportion of excluded participants reporting a SOGS-R score of ≥ 5 was considerably higher (48.3%) than for non-excluded gamblers (10.8%). Scoring on the PHQ-4 showed that there was no statistically significant difference between the exclusion status of the participants ($p = 0.144$). In terms of 6-month gambling participation, respondents could indicate several forms of gambling. Table games held in land-based casinos were mentioned the most frequently. It is noticeable that fewer gamblers had participated in licensed online games rather than in unlicensed (illegal) offerings. The proportion of excluded gamblers was significantly higher for those gamblers partaking in licensed online games, whereas no differences were found for other types of gambling. We should note that, unlike corresponding online offers, land-based lottery and sport-betting products were not part of the overarching exclusion system.

Analysis of casino gambler well-being over time

55% ($n = 133$) of the $n = 242$ respondents who participated across all three survey waves (T1-T3) were not excluded at any time point, 13.6% ($n = 33$) were excluded at the time the first survey and the ban continued for the subsequent 12 months (entire duration of the study). The exclusion status of 31.4% ($n = 76$) participants changed over the course of the study (they were excluded for at least one wave. This group either had an exclusion

Table 2. Short-term-excluded gamblers' exclusion variants.

Gambler type	Survey			<i>n</i>
	1	2	3	
Excluded	e	e	e	33
Short-term-excluded				
	e	e	ne	5
	e	ne	e	6
	e	ne	ne	18
	ne	e	e	7
	ne	e	ne	11
	ne	ne	e	10
		Excluded between waves		19
Non-excluded	ne	ne	ne	133
Total				242

Note: 'e' and 'ne' denote 'excluded' and 'not excluded', respectively.

Table 3. Effect of the exclusion on well-being over time ($n = 242$).

Variable	Excluded gamblers ($n = 33$)			Short-term-excluded gamblers ($n = 76$)			Non-excluded gamblers ($n = 133$)			p -values		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	GT	SV	GT*SV
Mental health	5.3	3.8	3.3	6.8	6.1	6.8	4.7	4.8	4.8	<0.001	0.202	0.002
Well-being	11.8	15.0	15.0	12.7	13.7	13.4	15.5	14.6	14.6	0.010	0.700	<0.001
Life satisfaction	6.1	6.6	7.0	6.0	6.3	6.4	6.8	7.0	6.9	0.002	0.003	0.167
Satisfaction with life domains												
Finances	3.8	4.8	4.9	5.9	6.2	6.1	6.3	6.4	6.5	<0.001	0.004	0.042
Relationships	7.0	6.5	6.8	6.0	6.4	6.2	6.9	7.2	7.2	0.002	0.230	0.281
Leisure-time	6.5	6.7	7.0	6.0	6.1	6.2	6.8	6.9	6.7	0.005	0.542	0.483
Housing	7.2	7.5	7.7	6.2	6.5	6.6	7.3	7.3	7.4	<0.001	0.047	0.458
Health	7.3	7.1	7.1	6.7	6.6	6.7	7.0	7.4	7.1	0.082	0.118	0.109
Occupation	6.9	6.7	6.8	5.9	6.0	6.2	6.6	6.6	6.7	0.021	0.454	0.899
Problem Gambling	5.0	3.6	2.8	2.6	2.4	2.2	1.3	1.3	1.3	<0.001	0.028	<0.001

Cells display means for each measure at the three time points of data collection. GT and SV denote gambler types (GT) and surveys (SV), respectively. The gambler types are excluded gamblers, non-excluded gamblers, and short-term excluded gamblers. The surveys distinguish between the first survey time point (T1), the second (T2), and the third (T3). Observations with missing values have been removed from the analysis. The indicators were evaluated using the following measures: Mental Health: PHQ-4; Well-being: WHO-Five Wellbeing Index; life satisfaction: Life Satisfaction-1 short scale; satisfaction with life domains: Swiss Household Panel; problem gambling: SOGS-R

that started during the second or third wave or an exclusion that was lifted during the survey period. This group of participants will hereafter be referred to as ‘short-term excluded’. A total of $n = 25$ gamblers had two exclusions issued during the survey period (these were repeated exclusions). Table 2 shows the exclusion variants issued to short-term-excluded gamblers (see also in Lischer, Schwarz, Wallimann, & Mathys, 2023).

Table 3 shows the general well-being, and satisfaction with respect to life domains, mental health, and problem gambling status of excluded and non-excluded gamblers, over time.

The trajectories of the indicators examined are illustrated in Table 3. The dropout rate of study participants between the first and second survey was 21.4% ($n = 74$), whereas the dropout rate between the second and third survey was 11.0% ($n = 30$). Analysis showed that the gamblers who dropped out were comparable to the study population. For instance, 76.0% were men (baseline T1: 70.7%), and 53.8% were between 26 and 45 years old (baseline T1: 58.8%). Moreover, 20.2% reported experiencing severe gambling-related problems (SOGS-R score ≥ 5) (baseline T1: 20.2%). Regarding mental health problems, it should be noted, that 12.0% of the gamblers who dropped out were classified as having severe mental health problems according to the PHQ-4 (baseline T1: 17.2%).

Gambler Types (GT) describes the three gambler types; excluded, non-excluded, and short-term-excluded. The p -value for GT describes whether there is a statistically significant difference in gambling behavior between the three groups. Except for subjective satisfaction with their own health ($p = 0.082$), statistically significant differences regarding finance ($p < 0.001$), relationships ($p = 0.002$), leisure-time ($p = 0.005$), housing ($p < 0.001$), and occupation ($p = 0.021$) existed between each of the different gambler types. The difference in well-being for the three gambler types across the three survey time points is presented as SV (Survey). Statistically significant differences were observed regarding life satisfaction ($p = 0.003$), satisfaction with finances ($p = 0.004$) and the housing situation ($p = 0.047$) as well as regarding problem gambling ($p = 0.028$). Of particular interest, however,

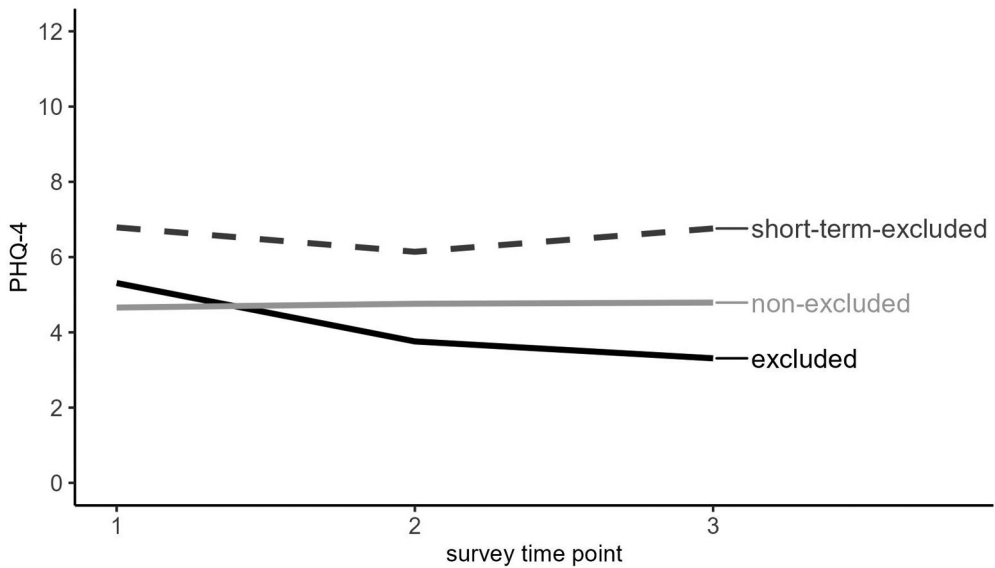


Figure 1. The trajectory of mental health over time.

were the changes observed for each category of general well-being over time, due to exclusion, in other words, the interaction between GT and SV. A statistically significant interaction emerged for mental health ($p = 0.002$), well-being ($p < 0.001$), satisfaction with the financial situation ($p = 0.042$) and problem gambling ($p < 0.001$).

Given the statistically significant differences between excluded and non-excluded gamblers over time, in terms of mental health, general well-being, satisfaction with finances, and problem gambling, these variables are presented in greater detail below (Figures 1–3). In addition to a repeated measures ANOVA, the correlation of these variables with problem gambling was also examined, since it could be assumed that this variable had an influence on the gamblers' well-being.

The trajectory of mental health over time

A statistically significant Spearman correlation coefficient of $\rho = 0.26$ demonstrated a weak positive correlation between mental health and the severity of problem gambling in the study at hand.

In terms of mental health, no statistically significant difference was observed between excluded and non-excluded gamblers at the first survey point T1 (see Table 1). Additionally, there was no difference between gamblers excluded for 12 months and those excluded for shorter periods (short-term excluded).

The statistical analysis with repeated measures ANOVA revealed that the elapsed time (T1, T2, T3) has no statistically significant influence on the mental-health score. The type of gambler (excluded, short-term excluded, non-excluded) had a statistically significant influence on the level of the mental-health score, $F(2, 226) = 12.06$, $p < 0.001$. The mean mental-health score level was highest for the short-term excluded group, which is

indicative of more severe mental health problems. There was also an observed interaction between elapsed time and the type of gambler, $F(4, 452) = 4.26$, $p = 0.002$. Thus, the trajectory of the mental-health score over time varied by gambler type (see Table 3).

Figure 1 shows that the mean score for mental health showed a statistically significant decrease for gamblers who were excluded for 12 months, while no trend could be observed for gamblers who were excluded for a shorter period. As mentioned earlier, the highest mental health scores indicate more severe mental health problems. It is worth noting that the mean mental health score of the short-term excluded group at the third survey time point was 6.8, which corresponded to moderate mental health problems (6–8). In contrast, the mean mental health score of the excluded gamblers was 3.3 at the third survey point, which corresponded to mild symptoms (3–5). For the non-excluded gamblers, the corresponding value increased slightly. At the third survey point, the excluded gamblers reported even lower well-being-scores than the non-excluded gamblers.

The trajectory of well-being over time

Figure 2 illustrates that reported gambling disorders were negatively related to subjective well-being. A statistically significant negative correlation of $\rho = -0.4$ emerged between well-being and gambling disorder.

A statistical analysis with repeated measures ANOVA revealed that time point had no statistically significant effect on well-being. However, the gambler type (excluded, short-term excluded, non-excluded) had a statistically significant effect on well-being, $F(2, 232) = 4.70$, $p = 0.010$. There was a statistically significant interaction between elapsed time and gambler type, $F(4, 464) = 7.11$, $p < 0.001$. Moreover, the change in well-being over time varied by gambler type (see Table 3).

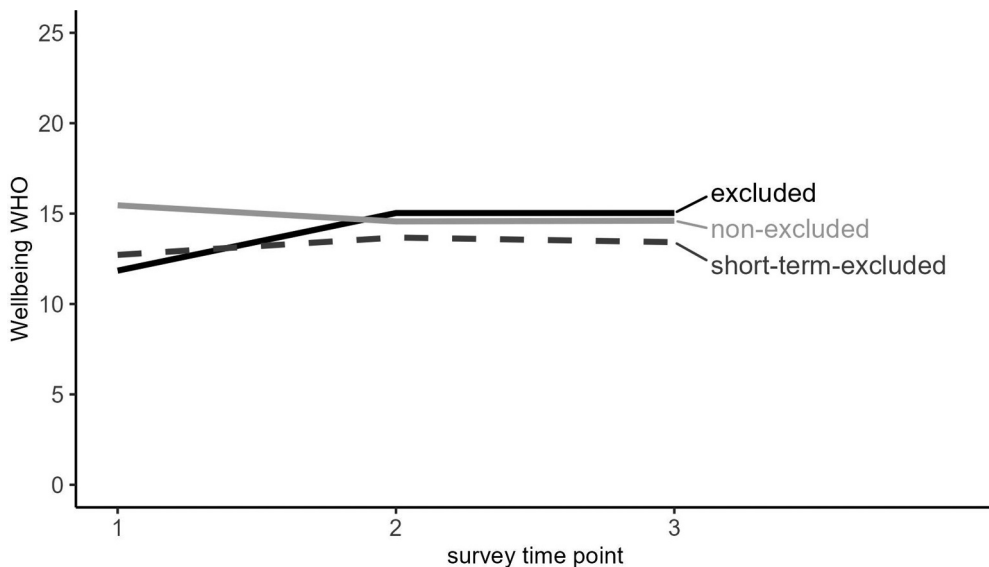


Figure 2. The trajectory of well-being over time.

As mentioned earlier, a high well-being score was taken to indicate better well-being. At the first survey time point T1 the mean well-being value of 11.8 indicated poor well-being for excluded gamblers. However, well-being increased at T2 and remained stable from that date. Short-term excluded participants' well-being was just below the threshold for poor well-being at T1 and scored slightly above the threshold at T2 and T3. Finally, the non-excluded gamblers showed scores above the threshold during all three survey time points. However, well-being decreased slightly over time (see Figure 2).

The trajectory of satisfaction with finances over time

A statistically significant moderate negative correlation of $\rho = -0.47$ existed between subjective satisfaction with one's financial situation and problem gambling.

A statistical analysis with repeated measures ANOVA revealed that time point had a statistically significant effect on satisfaction with finances over time, $F(2, 466) = 5.56$, $p = 0.004$. The same was found for gambler type, $F(2, 233) = 16.95$, $p < 0.001$. Moreover, there was a statistically significant interaction between elapsed time and gambler type, $F(4, 466) = 2.50$, $p = 0.042$. Therefore, changes in satisfaction with finances over time varied by gambler type (see Table 3). Excluded gamblers' satisfaction with their financial situation increased considerably, over time. Specifically, at T1, the mean value of 3.8 indicated relatively poor satisfaction with finances for excluded gamblers. Satisfaction increased from T2 and remained stable from this point onwards (see Table 3). Short-term-excluded gamblers' and non-excluded gamblers' satisfaction with finances were higher, with values between 5.9 and 6.5. Overall, their satisfaction with finances increased slightly over time (except for short-term excluded participants, from T2 to T3; see Figure 3).

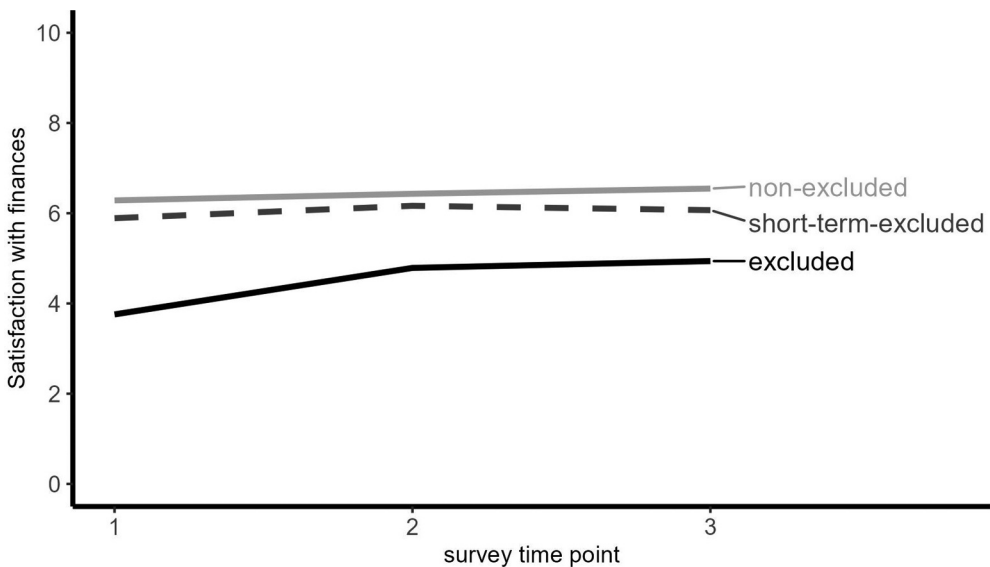


Figure 3. The trajectory of satisfaction with finances over time.

The trajectory of problem gambling over time

A statistical analysis with repeated measures ANOVA revealed that time point had a statistically significant effect on SOGS-R values, $F(2, 478) = 3.62, p = 0.028$. The same occurred for gambler type, $F(2, 239) = 34, p < 0.001$. Therefore, the gambler type had a statistically significant impact on problem gambling. Moreover, there was a statistically significant interaction between elapsed time and gambler type, $F(4, 478) = 6.09, p < 0.001$ (see Table 3).

At time T1, the mean SOGS-R score of the excluded gamblers amounted to 5.0 (see Table 3), the mean SOGS-R value then decreased at T2 (3.6) as well as T3 (2.8). On the other hand, for both the non-excluded and short-term excluded gamblers, the SOGS-R values remained mainly stable across time (see also Lischer, Schwarz, Wallimann, & Mathys, 2023).

Discussion

Gambling harm can negatively impact on the health and well-being of individuals in many ways (Blackman et al., 2019). The aim of this three-wave longitudinal study was therefore to evaluate the influence of exclusion as a harm reduction intervention on several subjective well-being measures. The present study follows the premise that more subjective measures of well-being should be included when evaluating treatment outcomes for problem gambling (Pickering, Keen, et al., 2018) though, of course, exclusion is not a treatment, but a harm-reduction measure. Overall, the results of the study regarding improved well-being due to exclusion, are in line with previous studies (Hayer & Meyer, 2011; Kotter et al., 2019; Ladouceur et al., 2007; Nelson et al., 2010; Pickering, Blaszczyński, et al., 2018). However, it is unclear whether previous results were due to self-exclusion, as no comparison group was included in these studies (Hing et al., 2015). The present study, which is a part of a large-scale research project investigating the influence of exclusion on gambling behavior (Lischer, Schwarz, Wallimann, & Mathys, 2023), motivation for seeking help (Lischer, Schwarz, Wallimann, Jeannot, et al., 2023) as well as well-being, therefore attempts to fill this research gap by, on the one hand, forming a comparison group of non-excluded gamblers and, on the other hand, differentiating between whether gamblers were excluded for 12 months or for a shorter duration and/or repeatedly, over the course of the study. This methodological approach allowed measurement of the duration of exclusion and evaluation of any subsequent impacts on subjective well-being.

An important finding of the study at hand is that excluded gamblers' general well-being statistically significantly increased over time. As previously noted, a high well-being score was taken to indicate better well-being. At the baseline, the excluded gamblers report a lower score (11.8) for their general well-being than the respondents, who were excluded for a shorter period (12.7). After six months, the scores can be seen to stabilize at a higher level and, at the third survey, amount to 15.0. Thus, the values are comparable to those in the study from Kotter and colleagues (Kotter et al., 2019). On the other hand, the mean value of the short-term-excluded participants increases only slightly and decreases to 13.4 after the second survey time point. The finding that scores are statistically significantly higher among gamblers who are excluded for 12 months compared to the short-term-excluded gamblers is also in line with the results reported above (Pickering, Blaszczyński, et al., 2018). The finding that statistically significant changes in gambling behavior and a reduction in levels of problem

gambling can only be observed after six months, was also noted in the first study of the overarching research project (Lischer, Schwarz, Wallimann, & Mathys, 2023).

A weak positive correlation between mental health and gambling disorder was found in the present study. This finding is consistent with existing evidence that gambling disorder is associated with other mental disorders such as depression, anxiety disorders, bipolar disorders, personality disorders, and substance use (Butler et al., 2020; Lorains et al., 2011; Petry, 2005). The study at hand shows noteworthy results. While a decrease in PHQ-4 scores from 5.3 to 3.3 can be observed amongst the excluded gamblers, the PHQ-4 score of the short-term-excluded group initially decreases (6.8 to 6.1), and then returns to its original level (6.8) at the third survey time point (corresponding to moderate mental health problems, overall). In the control group, the scores remain stable (4.7 and 4.8, respectively), indicating mild mental health problems.

Research findings support the hypothesis that individual well-being decreases as gambling disorder increases (Farrell, 2018). The present study found a statistically significant negative correlation of $\rho = -0.4$ between well-being and gambling disorder, which is thus consistent with existing evidence. In this regard, reference should be made to a longitudinal survey conducted in Australia, which revealed that individuals experiencing gambling problems face lower levels of well-being than those without gambling problems. It is particularly noteworthy that these lower levels of well-being are found going back over a decade (Paterson et al., 2020), and that legacy harms can extend far beyond harmful episodes of gambling (Rockloff et al., 2022). The concept of legacy harms is highly relevant to the present study. Besides exclusion, there is also a need for programs and strategies to help gamblers reduce and manage their gambling-related legacies (Rockloff et al., 2022). Further research should therefore focus on how appropriate programs and policies could be designed.

Regarding mental health, a decrease in PHQ-4 scores from 5.3 to 3.3 can be observed amongst the excluded gamblers (which equates to an improvement in mental health), while the PHQ-4 score of the short-term-excluded group is 6.8 at the baseline, then decreases to 6.1, and returns to 6.8 at the third time point (corresponding to moderate mental health problems, overall). In the comparison group, the scores remain stable (4.7 and 4.8, respectively), indicating mild mental health problems. This finding is consistent with existing evidence that gambling disorder is associated with other mental health disorders such as depression, anxiety disorders, bipolar disorders, personality disorders, and substance use (Lorains et al., 2011; Petry, 2005). Associations between gambling problem severity, health and well-being have also been demonstrated in a recently conducted exploratory study. The authors demonstrate that problems regarding health and well-being are not limited to gamblers with the most severe gambling problems (Butler et al., 2020), which supports the view that gambling-related harms can occur across the spectrum of gambling behavior and severity of gambling problems (Langham et al., 2016).

It is already widely recognized that disordered gambling behavior can cause financial harm. The study at hand asks about the satisfaction of one's own financial situation, and here, too, the benefit of exclusion as a harm-reducing measure becomes apparent: The satisfaction of the excluded gamblers increases (and this is a change that reaches statistical significance) even though the values are still lower than those of the comparison group. This finding should be interpreted, with reference to a recently conducted cross-sectional study, which investigated debt stress as a mediator in the relationship between gambling frequency and mental health

and well-being (Swanton & Gainsbury, 2020). Furthermore, stress due to debts accounts for a substantial proportion of psychological distress associated with problem gambling, low levels of well-being, depression, and impact upon family members, even after potentially confounding variables such as psychiatric background history and socioeconomic status are controlled for (Swanton & Gainsbury, 2020). However, contextual difficulties are inherent in measuring financial harm. The absolute value of money lost may vary depending on the financial means of the gamblers, and aggregate measures of financial harm are thus limited (Browne et al., 2016).

Limitations

As originally reported in Lischer et al. (2021), there are several methodological limitations that may have influenced the results of the present study. The recruitment procedure may cause a selection bias for the sample. Furthermore, as there were certain recruitment constraints, the sample size was less than anticipated for excluded gamblers. Nevertheless, it is important to hold in mind that smaller sample sizes can still identify effects worth reporting, as demonstrated by a Cohen's f analysis of achieved effect sizes.

Another important limitation is the conceptualization of the short-term excluded subgroup, which includes several different exclusion variants that occur over time (i.e. people who became excluded during the study, people whose exclusion was lifted during the study, people whose exclusion was both implemented and lifted during the study). The small number of cases does not allow an evaluation of the different variants separately. However, the situation of a gambler whose exclusion came into effect at the second or third timepoint may be different to the situation of a gambler whose exclusion was lifted once or even several times. The findings regarding this group should therefore be interpreted with much caution. Nonetheless, the findings are important, as they indicate, that more detailed research is required into the influence of exclusion upon the subjective well-being of short-term and/or repeatedly excluded gamblers.

Additionally the COVID-19 pandemic is likely to have had an impact upon the findings due to the necessary closure of land-based casinos, which took place from March to June 2020, and again from November 2020 to January 2021. These circumstances were taken into account by asking gamblers to consider only the time outside the lockdown when reporting on their game participation. However, one can assume that the ongoing context of the pandemic also influenced gambling behaviors as well as subjective well-being during the period that the study was carried out.

Within the context of subjective well-being, it is important to note that not all individuals who gamble report poor health and lifestyle. A subset of gamblers may actually benefit from the recreational and social nature of gambling (Blackman et al., 2019). This issue was not included in the scope of this article.

In keeping with a public health approach, gambling-related harms can be reduced by interventions covering different aspects of the gambling pathway, including regulating access to gambling, and screening people who may be at risk of gambling-related harms as well as providing services for people impacted by such harms (Blank et al., 2021). The three studies carried out in relation to exclusion and gambling have so far provided evidence of the intended influence of exclusion on gambling behavior (Lischer, Schwarz, Wallimann, & Mathys, 2023), motivation to seek help (Lischer, Schwarz, Wallimann, Jeannot, et al.,

2023) and (in the case of the present study) subjective well-being. Accordingly, the focus is directed at the gambler, the environment and regulation are only indirectly included. The results of these research studies should therefore be seen as several pieces of the jigsaw puzzle, in determining a comprehensive public health approach.

Conclusion

In the present study, gambling-related harm is considered as a reference point for the influence of exclusion on well-being. As confirmed by the results of previous studies (Håkansson & Henzel, 2020; Lischer, Schwarz, Wallimann, & Mathys, 2023) and findings of a systematic review (Kotter et al., 2018), not all excluded gamblers demonstrate disordered gambling behavior. Nevertheless, they may be affected by gambling-related harms, which have been shown not only to affect the small minority of high-risk individuals, but also to occur amongst low- and moderate- risk gamblers (McMahon et al., 2019). This supports the argument that addressing ‘gambling across the whole continuum of risk should be a key public health priority’ (Butler et al., 2020, p. 527).

Using exclusion as a harm-reducing measure may not only serve to reduce gambling disorder and mental health problems but also to positively influence subjective well-being. Restricting access to gambling via measures such as pre-commitment or self-exclusion is therefore an effective approach (Paterson et al., 2020). It is indispensable that the Swiss gambling legislation sets clear and binding legal requirements and criteria for the exclusion of gamblers through gambling operators. However, it is important to also consider the parameters of subjective well-being and satisfaction in the different domains of life when applying harm reduction measures.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The work was supported by the Hochschule Luzern Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung [10001A_178811].

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Data availability statement

The dataset generated by the survey research and analyzed during the current study is available in the SWISSUbase repository, <https://doi.org/10.48573/9fp4-fw62>

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